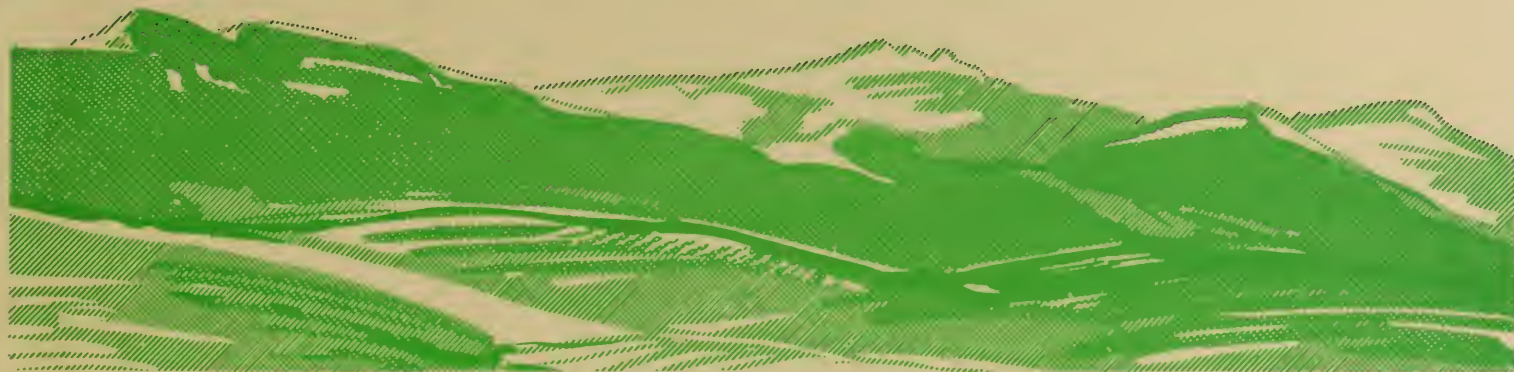


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RANGE IMPROVEMENT

VOL. 8, NO. 2

NOTES

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INDEX

Methods and Results By Which the Forest Service Obtains Proper Range Use on Lands They Administer	1
Fencing Costs on the Texas Experimental Ranch	8
(Also remarks from Region 1)	
Use of Apples in Rabbit Poisoning	11

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STATEMENT OF PURPOSE

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This publication is printed primarily to inform professional range administrators of important range improvement and management developments and findings. These "Notes" may include extracts of published papers, unpublished preliminary reports of research work, unpublished reports on administrative studies and personal observations or suggestions of other range administrators. No claim is made as to the accuracy or completeness of studies or conclusions drawn.

All who read these RANGE IMPROVEMENT NOTES are encouraged to submit material for publication, or suggestions for improving its usefulness. Full credit will be given for any material used.

METHODS AND RESULTS BY WHICH THE
FOREST SERVICE OBTAINS PROPER RANGE
USE ON LANDS THEY ADMINISTER

Presented at the annual meeting of the Utah Section, American
Society of Range Management, December 15, 1962, by
Lowell E. Horton, Range Staff Officer, U. S.
Forest Service, Ashley National Forest

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It seems to me that the subject - proper range use - can be approached from several directions and obviously one cannot hope to cover all of these directions in a single paper. Therefore, in developing the subject, "How the Forest Service Obtains Proper Range Use," I shall need to make various assumptions as a basis from which to start.

First of all, it must be understood that no Forest Service administrator is a range manager, per se. Rather he is a land manager. Assigned, as he is, to manage a complex unit of land containing many resource values and a wide variety of uses, he would be in error to confine his management duties to only one use. Therefore, we can assume that as he goes about his job of day-to-day management of the separate activities, he must always keep in the back of his mind an awareness of the relationship of that particular use to the other resource values on the land which he administers. The importance of this concept to Forest Service management will become more evident as I go on. Now, let us come more closely to the subject at hand.

Since about 1950, the Intermountain Region of the Forest Service has used a procedure known as "Range Allotment Analysis" as a basis for applying range management to the lands they administer. In this application, the range allotment serves as a management unit.

The range allotment is merely a complex unit of land, varying in size, topography, soils and vegetation, and containing a variety of different resources, each contributing in one degree or another to the needs of the American people. From a range management standpoint, it is the area used by a single National Forest livestock operation, that is, one band of sheep or one herd of cattle.

The range allotment analysis procedure has two basic parts. In actual practice, these are usually intermingled to a certain extent, but for purposes of clarity, I shall set them apart here. The first part is an inventory. It consists of a determination of things now existing or occurring on the area being studied. It involves such things as delineation of vegetative cover types, determination of present condition for both soil and vegetation, an evaluation of trends, a determination of areas suitable for permanent grazing use, an inventory of existing physical range improvements, a study of livestock distribution patterns, an evaluation of present management, and a determination of grazing capacity under existing conditions. It will also involve a review of research findings as they apply to that particular range allotment.

The second part of the analysis deals with the potential of the area for future grazing use. It involves the preparation of a development program and a management plan for the allotment and the implementation of these plans toward maximum forage production of the suitable range and efficient management of the grazing use as an integral part of land management for the area. It also includes an evaluation of past use as related to present conditions and an investigation of soil and ecological characteristics since these factors are directly associated with the potentials of the area. For the balance of this paper, I should like to deal with the second part of the range analysis procedure only. In other words, starting at a point where the resource inventory has been completed and the present grazing capacity determined, "how does the Forest Service proceed toward a fully integrated grazing management program for the allotment?"

A fundamental prerequisite to proper management for any area is a recognition and understanding of the objectives toward which the land manager is moving. These objectives may vary widely between public land management agencies, and between public and private land managers.

The Forest Service operates under the concept of multiple use management. The objectives of management as applied by the Forest Service on the lands they administer, therefore, becomes one of blending, integrating and correlating the various uses for which an area is adaptable so as to best meet the needs of the American people. The values of each of the five uses now recognized by law, namely, outdoor recreation, range, timber, watershed, and wildlife and fish must all be weighed as to the values they may contribute, and to their adaptability to the site. By definition then, the objective of Forest Service land

management is the harmonious and coordinated management of the various resources, each with the other, without impairment of the productivity of the land, with consideration being given to the relative values of the various resources, to the end of greatest public benefit, but not necessarily the greatest dollar return or the greatest unit output. This definition is taken from Public Law 517, also known as the "Multiple Use Law". The same objective was stated in much more simple terms in 1905 when Secretary of Agriculture Wilson instructed the Chief of the Forest Service that National Forest lands were to be managed "for the permanent good of the whole people and not for the temporary benefit of individuals or companies and that conflicting interests will be decided from the standpoint of the greatest good of the greatest number in the long run." With this objective in mind, we can now proceed to discussion of proper range use as practiced by the Forest Service on lands which they administer.

As I said before, we shall start from a point where the inventory of the resource has been completed, and a determination of carrying capacity under present management and present conditions has been made. The next step is the preparation of a development plan for the allotment. This plan should have as its goal the bringing of all areas of suitable range into maximum production, the correction of all existing soil and watershed problem areas, and the installation of all physical range improvements needed to implement an efficient range management system. Through a study of the soils and a review of the ecology for each site, those areas of suitable range which have a potential for greater forage production will be delineated and a method of treatment planned which will achieve maximum production. One must also establish tentative locations of additional fences, water developments, stock trails, and other physical range improvements which are necessary to achieve the most efficient management. An additional job is to delineate on a map those areas where rehabilitation treatment is needed to achieve soil stability and to correct accelerated erosion. Methods of treatment must be planned for these sites.

Throughout the range analysis procedure, it is important that other resource values be recognized and considered. However, at this point in planning it becomes necessary to bring multiple use coordination into the picture as a specific job. The various proposed facilities and treatments must now be considered in the light of their relationship to other uses and modifications must be made as needed so

that there will be a minimum of conflict and a maximum of coordination between the grazing use and other uses that are adaptable to the area.

An example of the kind of modification I am talking about would be a case where small patches of sagebrush occur in an aspen area along a main traveled road. In range management planning, these might be programmed for spraying with 2, 4-D to increase forage production. When viewed from the multiple use standpoint, they might well be eliminated from the spray project with relatively little effect on grazing capacity but with a definite benefit to the roadside scenery. Another example would be the shifting of a stock watering facility out of a winter big game concentration area in order to avoid enticing domestic livestock into that area.

While livestock permittees will already have participated to a certain extent in developing the inventory and in determining present grazing capacity, it becomes highly important that they and the local Forest officer work closely together in preparing the allotment development plan. This is a good way to insure that the planned program is workable from the standpoint of the livestock operation.

Once the plan has been modified as needed after considering its relationship to other uses and after studying it on the ground, the planned development should be set down in a schedule for accomplishment. This means that the various phases of the treatment will be scheduled - often over a period of several years - together with arrangements for needed protection of treated sites. Needs for reduction or increase in the amount of permitted grazing use must be taken into account at this time so that upon completion of the development work, stocking rates and grazing capacity will be in approximate balance. The whole program thus scheduled, should be set forth in a written agreement so that there is no question in the minds of either Forest officer or livestock permittee as to what parts of the program each has agreed to accomplish. Once the development program has been set down in this fashion with a written agreement between the Forest Service and the grazing permittee, the job remaining is that of financing and accomplishing the work on the ground.

Stated very simply, the program should, when completed, place the land included within the allotment into its optimum condition for contributing to the needs of the American people or will result in a trend on all areas which will lead to that objective.

The last step in achieving proper range use then becomes one of designing a management system which will provide for an efficient livestock operation and at the same time maintain the stability and productivity of the land with a minimum of conflict with other uses. Management systems now being applied rather widely in the Intermountain Region in most cases involve one form or another of rest-and deferred-rotation grazing. On cattle allotments, this often develops into a pasture management system. On sheep allotments it is more often applied by resting certain parts of the allotment from grazing use each year under a planned schedule. There are many and varied combinations of systems now in use which employ the basic principle of rest-rotation grazing.

The management system which one might plan for a given range allotment must be "tailor-made" for that allotment. It must take into account such things as the needs of the vegetation and soil, the response of the livestock, the number of pasture units available for rotation and the degree to which that particular livestock operation can be manipulated. Even though rest-rotation systems show great promise for increasing grazing capacity, there are still many unknowns. Research is currently seeking answers to some of the questions involved.

One final step is needed to round out the procedure I have described to you. The proof of the effectiveness of any development and management program lies in testing its results on the ground. The Forest Service range allotment analysis procedures provide for long-term trend studies to help in this evaluation. I also believe that, before many more years have gone by, a measure of the response of the animals themselves may also become a part of this evaluation. With these concrete measures of results, it will be possible to make such modifications in the management system as may be needed to increase its efficiency.

Again, I must emphasize that throughout the planning and accomplishment of the development and the management plan, the joint efforts by the land manager and the livestock permittee are exceedingly important. A perfectly designed plan loses effectiveness if it is not efficiently applied on the ground. For this reason, the land manager and the livestock permittee should reach agreement on the program to be followed and then proceed hand in hand in its accomplishment.

This then, is the method by which the Forest Service seeks to obtain proper range use on the lands which they administer. As to the immediate results of this method, they seem to me to be threefold. First, harvest of available forage by domestic livestock can be maintained as a fundamental use of National Forest land with a minimum of conflict with other important uses. Second, public benefits are gained from the values thus derived without impairment to the stability or productivity of the land. Third, and perhaps the most important result, the process of cooperatively preparing and carrying out the development program and the management plan tends to result in a closer working relationship between the land manager and the livestock operator.

In this discussion on how the Forest Service obtains proper range use on National Forest lands, there seems to me to be six points of particular importance..

1. A Forest Service administrator must be, first of all, a land manager dealing with all of the resource complex on the land area for which he is responsible.
2. Management under the multiple use philosophy requires that all of the resources on a given area must be utilized in the combination that will best meet the needs of the American people.
3. An entire range allotment should be developed as a single program rather than using a piecemeal approach. This tends to promote efficiency and cohesion in the planning job and achieves a greater degree of stability for the livestock operator.
4. A management system designed for any range allotment should include the principles of rest- and deferred-rotation grazing to the maximum extent possible.
5. At the time the management plan is set down as a written agreement between the Forest Service and the livestock permittee, all needed adjustments in the amount of grazing use must be taken into account so that, when the program is fully implemented, the permitted grazing use will be in balance with the grazing capacity.

6. By encouraging the livestock permittee to participate in the preparation of the development plan and the management system, he is given a much more personal feeling toward the program. On National Forest ranges, this is the best way to insure that the program will be carried out on the ground as intended.

It must be remembered that, by law, the Forest Service is charged with the responsibility of managing the National Forests. Unfortunately, it becomes necessary from time to time, to remind some folks of that fact. However, in achieving proper range use, it is of considerable mutual advantage for the permittee and the Forest officer to apply cooperative effort. There is still much room for improvement in the field of range management. Nonetheless, it is my observation that major progress has been made in the management of National Forest ranges during the past two or three years. There are encouraging signs that, within the next few years, proper use on all National Forest ranges may become an accomplished fact.

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Reverence for life . . . does not allow the scholar to live for his science alone, even if he is very useful . . . the artist to exist only for his art, even if he gives inspiration to many It refuses to let the business man imagine that he fulfills all legitimate demands in the course of his business activities. It demands from all that they should sacrifice a portion of their own lives for others.

By Albert Schweitzer

FENCING COSTS ON THE TEXAS EXPERIMENTAL RANCH

By William J. Waldrip*

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Construction of approximately 33 miles of fence on the Texas Experimental Ranch in Throckmorton County during 1959 afforded an excellent opportunity for a comparison of the costs for various types of fence. Terrain on the ranch varies from rolling to steep and broken; and the soils from deep to shallow and rocky.

Basic Types

Six basic types of fences were selected for comparison with the following specifications:

1. Standard fence - cedar posts, 20 feet apart with 1 wood stay between.
2. Standard fence - steel posts, 20 feet apart with 1 stay (wood or twisted wire).
3. Suspension fence - cedar posts 100 feet apart with 10 twisted wire stays.
4. Suspension fence - steel posts 100 feet apart with 10 twisted wire stays.
5. Semi-suspension fence - cedar posts 50 feet apart with 3 stays (wood or wire).
6. Semi-suspension fence - steel posts 50 feet apart with 3 stays (wood or wire).

All fences were made with four strands of 12-1/2 gauge barbed wire. Two strands were foreign made (Belgium) and two were domestic wire. Although the foreign wire was cheaper and contained several more feet per roll, the American wire was more uniform in quality and more easily unrolled for stretching. The cedar posts were 6 feet long with 4-inch tops, and the steel posts were 6-1/2 feet "I" posts with anchor plates. Costs of the individual items are given in Table 1. Total

* Assistant Range Specialist, Texas Experimental Ranch, Seymour, Texas.

materials costs and man-hours per mile for each type of fence are shown in Table 2. Although man-hours will vary among individuals building fences, the ratio of hours required for any two types should remain fairly constant.

Cedar posts 8 feet in length and 8 inches in diameter at the top were used as corners for all fences. These were installed with braces and "dead men". Wooden brace or stretch posts were provided at one-fourth-mile intervals, or at shorter intervals if required by the terrain.

At this time, all fences have been entirely satisfactory.

Suspension Fencing

The idea for the suspension fence came from Thomas Halff, Pearsall (as reported in the Journal of Range Management, Vol. 10, No. 6), and R. A. Brown, Throckmorton. Both of these men credit Tom Lasater, Falfurrias, with the original idea. Everyone the author has found who has tried this type of fence has been satisfied with it.

Table 1. Cost of Materials

LINE POSTS:

Cedar posts (Y5) - minimum of 6 feet length by 4-inch top, each	\$0.45
Steel "I" posts - 6-1/2 feet with anchor plates and 5-wire clips per post, each	1.00

CORNER POSTS:

Cedar, 8 feet x 8-inch top, each	1.75
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STAYS:

Cedar, each	.08
Spiral wire (42-inch), each	.0631

WIRE:

12-1/2 gauge galvanized, 2 barbs (American), roll	9.00
12-1/2 gauge galvanized, 2 barbs (Belgium), roll	7.25

The principal difference between a suspension fence and any other type is the distance between posts. In the suspension fence on the Experimental Ranch, posts are 100 feet apart and still wider spacings have been used by some ranchmen. Twisted wire stays were placed every 10 feet between the posts. These stays should be clear of the ground so that the fence can sway and whip when an animal contacts it. It is now concluded that six stays between posts would be more desirable.

Where wooden posts were used, small plates of 20 gauge metal were used in place of staples because the swaying of the fence may tend to work the staples loose. These plates, 1/2 x 1 inch in size, had holes punched in each end so that 6 penny nails could be used to hold the wire against the post. By placing the plate over the wire and driving a nail above and below, the wire should remain in place indefinitely. Steel posts require only the clips that come with the posts for holding the wire in place.

After more than 2 years of use the suspension fence has proved fully as effective as the standard fence in the restriction of live-stock movement. Because of its resilience, animals are not likely to run through or break a strand of the suspension fence; and because of its whipping action, bulls are discouraged from fighting through the fence.

Table 2. Materials Cost and Man-Hours Per Mile

Fence type	Wire	Posts	Stays	Total	Man-Hours
1	\$130.08	\$124.00	\$20.80	\$274.88	168
2	130.08	262.20	20.80	413.08	112
3	130.08	29.95	20.66*	180.69	108
4	130.08	56.25	20.60	206.93	98
5	130.08	53.35	24.72	208.15	133
6	130.08	107.21	24.72	262.01	103

* Six stays per 100 feet.

Fences and other improvements on the Texas Experimental Ranch were constructed with funds contributed by ranchmen and business men throughout West Texas. The land (7,040 acres) and cattle to stock it were provided by the Swenson Land and Cattle Company of Stamford.

(From the November-December 1961, TEXAS AGRICULTURAL PROGRESS. Vol. 7, No. 6. Pages 9-10. TAP 258.)

Editor's Note:

A newly patented rigid 8-gauge, 2-wire fence stay is now on the market. These stays in quantities of 1,000 or more cost about 14 cents each. They are stocked by the GSA in Denver, stock number 5660-008-3003, fence stay 39 in. 8-gauge wire, Universal fence stay or equal.

Region 1 of the Forest Service, Missoula, Montana, reports that Forest Ranger Clement L. Kalitowski, Gallatin National Forest, Montana, has tried suspension fencing. His comments are quoted:

My experience with suspension fencing was limited, but I was satisfied with the results.

Funds needed to replace 2-1/2 miles of fence were not sufficient for the conventional four-wire, 16 foot spacing of posts.

An article on this fence in the Range Management Journal by a Texas rancher intrigued me. I decided to give it a try in the Castle Mountains in an area subjected to heavy snow drifts and elk crossing through. A three-man crew tore down the original five-wire jackleg fence, rolled all the old wire, hauled the jacks away, and built the suspension fence in, I believe, a little over 3 weeks.

After one winter we had no repairs to make - the elk or heavy snow did not break a wire.

I described this fence to Mr. Almon Berg, a rancher at Lennep, Montana. He built several miles of fence a year before we did. He was sold on it as it reduced fencing costs and also found that bulls fighting through the fence did not break a wire.

For clips, I suggest trying the hanger strap that plumbers and electricians use. It's perforated and can be cut into the required length with a chisel.

Spacing of posts will vary with terrain, on flat ground every 150 to 200 feet. In rolling terrain, spacing will have to be regulated by the up-and-down pull of wire.

USE OF APPLES IN RABBIT POISONING

By Sam E. Warren*

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In 1960, 300 acres were plowed and seeded to crested wheatgrass on the Tierney Creek cattle allotment in central Nevada. In 1962 it was necessary to replant 180 acres due to heavy use by rabbits. The rabbits had eaten practically every blade of grass on the lower one-half of the seeding for two years in a row.

A poisoning program was planned with the cooperation and assistance of Ray Alcorn of the Rodent Control Division of the U. S. Fish and Wildlife Service. The first phase of this program, using apples, took place on December 1962 when there was no appreciable snow cover on the ground.

Two different systems were used. On two areas unpoisoned apples were put out as bait two days prior to poisoning. On two other areas poisoned apples were distributed without baiting.

Cull apples were bought from a local orchard for \$1 per box. About four boxes were used. Two boxes of apples were cut into eighths and used as bait. This was put out along a total of approximately one mile of road in two different areas. One man rode in the back of a slowly moving pickup and dropped from one to several pieces of apples in each rabbit trail that crossed the road. The number of pieces per trail depended on the size and apparent traffic on each trail. Two days later these areas were checked and no apples were found.

The other two boxes of apples were cut into eighths and mixed with strychnine at a rate of one ounce to one and one-half gallons of cut apples. Mixing was done by hand in a large bucket and rubber gloves were worn. The strychnine was furnished by the U. S. Fish and Wildlife Service.

The poisoned apples were then put out by the same method and in the same locations as the bait, except that they were placed no more than two pieces to a trail and in most instances only one per rabbit

* District Forest Ranger, Toiyabe National Forest, Fallon, Nevada

trail. Two additional areas were also treated with the poisoned apples to determine if prebaiting was necessary; 1,200 to 1,500 pieces of poisoned apple were put out with enough poison on each piece to kill two rabbits. However, it was assumed that one rabbit would probably eat a whole piece.

During a spot check the following day 125 dead rabbits were counted from the pickup along a one-quarter mile stretch of road. This was in an area that was prebaited. Two days after the poisoned apples were put out they had been completely eaten in both the prebaited areas and in one area that was not prebaited. The bait was almost untouched in the fourth area and no dead rabbits could be found there. It is our guess that the rabbits had moved out of this area due to the lack of water nearby and to the fact that warm weather and wind had melted the few remaining patches of snow and dried out the vegetation. The other three areas were considerably closer to a live stream. All areas to be poisoned in the future will be prebaited two or three days before poisoning to determine if rabbits are in the immediate vicinity and if they will eat the apples. It is well worth the small amount of time and money used in prebaiting to insure a good kill when the strychnine is put out. From the results of the spot check and from the amount of poison eaten it is our estimation that at least 1,000 rabbits were killed.

The advantages of using apples are: Cheaper than alfalfa for treating similar sized areas, faster and easier to prepare and put out. The smell of apples seems to draw the rabbits if they are in the immediate vicinity.

The disadvantages are: Supply of apples is limited by season, apples are likely to deteriorate if storage is necessary, during periods of prolonged cold the apples will freeze and not be as readily eaten, when there is a cover of loose snow apples will sink and be covered, whereas alfalfa will stay on top of the snow and be more readily available. It is also thought that apples might be eaten by a wider variety of animals such as birds, whereas alfalfa would be more limited to rodents. In our work the only dead animals found besides jackrabbits were two ravens and one magpie. The cause of their death is unknown. Care must be taken when using apples just as when using alfalfa that no livestock are in the area and that there are no deer or other game concentrations.

Additional poisoning is planned using either alfalfa or apples, whichever we believe to be more effective as determined by the existing weather conditions and the results of previous poisoning.

Extreme care must be exercised on all poison programs. Supervision should be provided by the Fish and Wildlife Service and projects cleared with the State Fish and Game Departments.

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SAFETY IS GOOD BUSINESS

A profitable business depends on such factors as:

SAFETY IS AN
OPERATION
FUNCTION

AN ACCIDENT IS
AN OPERATIONAL
FAILURE

1. Skillful planning
2. Maximum production
3. Minimum cost
4. Quality control
5. Morale of personnel
6. General efficiency

The tools of a profitable business are:

1. Men
2. Machines
3. Materials

When accidents or injuries occur to these tools every one of the segments of the operation suffers and is affected.

Therefore, accident prevention is not something separate or additional to the regular job but is the combination of safe conditions and equipment and safe work procedures interwoven into every phase of the operation.

